

# NanoShaper installation guide for Ubuntu

Andrea Raffo, Ulderico Fugacci

March 2024

## 1 Prerequisites

With apt or apt-get:

- Run `sudo apt upgrade` or `sudo apt full-upgrade` to upgrade all the installed packages.
- Install `build-essential`, a *metapackage* (i.e., a package which installs many other packages). Among others, it includes `g++` and `gcc`: the GNU C and C++ compilers. It is required, for example, to compile anything from source distribution. The installation can be performed by typing `sudo apt install build-essential`.

## 2 Dependencies

- **Cmake** (version  $\geq 3.16.3$ )  
Download and install via `sudo apt install cmake`
- **Boost** (version  $\geq 1.71.0$ )  
Download and install via `sudo apt install libboost-all-dev`
- **GMP** (version  $\geq 2:6.2.0$ )  
Download and install via `sudo apt install libgmp-dev`.
- **MPFR** (version  $\geq 4.0.2-1$ )  
Download and install via `sudo apt install libmpfr-dev libmpfr-doc`.
- **Eigen** (version  $\geq 3.3.7-2$ )  
Download and install via `sudo apt install libeigen3-dev`.
- **Qt5** (version  $\geq 5.12.8$ )  
Download and install via `sudo apt install qt5-default`
- **CGAL**
  - Download the source code for `CGAL5.3.1` from [here](#).
  - Extract, create a build directory and go inside.
  - In the command prompt, use the commands:  
`cmake ..`  
`make`  
`sudo make install`
- Supposing that Eigen was installed in `/usr/include/`, link CGAL to Eigen as follows:  
`cd /usr/include`  
`sudo ln -sf eigen3/Eigen Eigen`  
`sudo ln -sf eigen3/unsupported unsupported`

- **NanoShaper**

- Download NanoShaper – integrated with Chanalyzer – from [here](#).
- Go inside `A_tetrahedral_representation`, create the directory `build`, and copy the file inside `CGAL_Patch` to `/usr/local/include/CGAL` by typing the following in the command prompt:  
`sudo cp CGAL_Patch/* /usr/local/include/CGAL`
- Run `./Chanalyzer_cmake.sh` (macOS Monterey) or `./Chanalyzer_cmake_ubuntu2004.sh` for Ubuntu 20.04